AF Association

CARDIOVERSION OF ATRIAL FIBRILLATION

Providing information, support and access to established, new or innovative treatments for Atrial Fibrillation

www.atrialfibrillation-au.org

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Introduction

Atrial Fibrillation is a common rhythm disturbance of the heart which may cause rapid irregular palpitations, chest pain, breathlessness or fatigue. Sometimes it is hardly noticed by the patient. In such cases it is often picked up by routine examination of the pulse (Figure 1), listening to the heart, or recording an electrocardiogram (ECG).

Figure 1: Feeling the pulse, which is very irregular and sometimes rapid in Atrial Fibrillation

The rhythm is usually irregular (with not even a hint of regularity) and often it is rapid unless treated.

There are two main strategies for treating Atrial Fibrillation: rate control and rhythm control. "Rate control" implies allowing Atrial Fibrillation to remain and controlling the heart rate so that the heart operates on a rate close to the normal rate, and reduces symptoms. This is often all that is needed when patients are relatively elderly, sedentary and asymptomatic (or only mildly symptomatic). "Rhythm control" means converting the irregular rhythm to the normal (sinus) rhythm and/or trying to prevent further episodes of Atrial Fibrillation. This is usually the approach which is favoured when the patient is relatively young, active and/or symptomatic from Atrial Fibrillation.

Cardioversion for Atrial Fibrillation

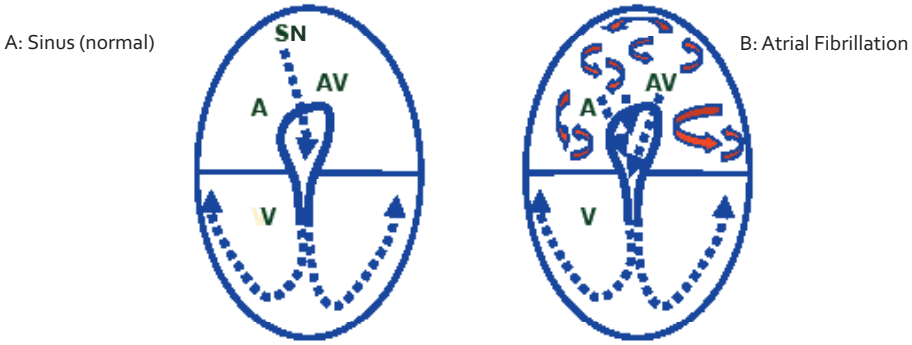
If Atrial Fibrillation has been present for only a relatively short time (usually less than one year), if the heart has not been damaged by disease or by the Atrial Fibrillation itself and if the cause of Atrial Fibrillation has been treated, is transient or is rela-

tively mild, it may be possible to convert the heart rhythm from Atrial Fibrillation (or Atrial Flutter) to the normal heart rhythm (sinus rhythm). This procedure is called cardioversion; it may be achieved by giving the patient a rhythm control medicine (anti-arrhythmic drug) by mouth (relatively slow response) or through the veins (relatively quick response). However, an electrical shock treatment, which at first sounds rather frightening, is usually the quickest and the most effective treatment.

Box 1: Cardioversion Techniques
Electrical Cardioversion
Medical Cardioversion
Pill-in-the-Pocket technique

Who should be considered for cardioversion?

During normal rhythm, the electrical impulse that activates the heart starts in the sinus node (natural pacemaker of the heart) and spreads through the atrium (collecting chamber) towards the AV node (electrical conduction pathway linking the atrium to the ventricle). The impulse passes through the AV node and down into the ventricles (pumping chambers), leading to contraction of the ventricles which can then be felt as a pulse (Figure 2, Panel A). When Atrial Fibrillation occurs, the atria are activated electrically about 500 times each minute. At such a fast rate it is not possible for the atria to beat mechanically and many of the electrical activations penetrate the conduction pathway (AV node) which slows the impulses to activate the ventricles (the main pumping chambers of the heart) in an irregular fashion (Figure 2, Panel B).



SN: sinus node (natural pacemaker); A: atrium; V: ventricle;
AV node (normal electrical conduction pathway from atrium to ventricle).

Figure 2:Diagrams of the activation of the heart during normal (sinus) rhythm (Panel A) and during Atrial Fibrillation (Panel B)

The result is often a rather rapid (up to about 180 beats per minute) and irregular pulse rate which the patient may sense (palpitations) or feel because of the chest pain, breathlessness, light headedness or fatigue that this rapid pulse may cause. Patients with Atrial Fibrillation may be treated in one of two ways: by allowing Atrial Fibrillation to continue and controlling the pulse rate so that the heart operates at a rate which is close to the normal rate and causes none of the symptoms mentioned above. Alternatively, the physician and the patient may choose to try to convert the Atrial Fibrillation back to the normal rhythm by cardioversion. This is usually appropriate if the patient is relatively young (a cardioversion may be considered for older people if criteria are met) and active, suffers from the symptoms of Atrial Fibrillation despite controlling the pulse rate, has had Atrial Fibrillation for a relatively short time (usually less than a year) and has no underlying heart or other disease that might be expected to re-start the Atrial Fibrillation. The treatment options should be thoroughly discussed by the doctor and patient in order to establish the best approach for the individual patient. When Atrial Fibrillation has only just started but shows no sign of stopping spontaneously, and when the patient is otherwise fi t and well, it is easy to decide that cardioversion is the best treatment. However, in most cases before making this decision, a number of tests may be needed.

TESTS: Electrocardiogram or ECG (Electrical tracing of the heart beat)

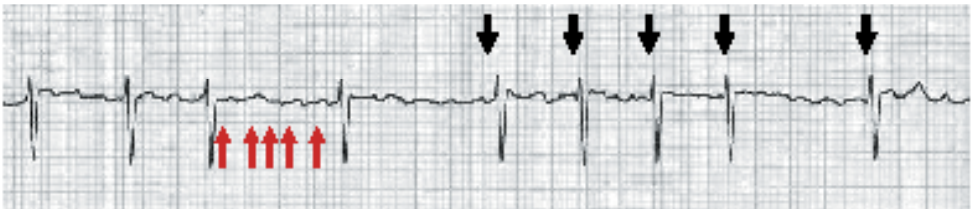


Figure 3: ECG (electrocardiogram) showing Atrial Fibrillation. The signals causing the beating of the ventricles (black arrows) are irregular and a little rapid; the signals picked up from the fibrillating atrium (red arrows) are very rapid and cause only an irregular ripple effect on the baseline of the trace.

An electrocardiogram (ECG) is often performed routinely, it is also performed if the patient complains of symptoms which may come from the heart, for example chest pain, breathlessness or palpitations. An ECG is simply a recording of the electrical activity of the heart. It is done by connecting wires to the body of the patient and running them to a machine which can detect voltage differences on the surface of the body. The test is painless and quick, a few minutes at most. Sometimes wires are left attached and connected to an ECG monitor, so that the heart rhythm can be observed continuously, until treatment has been given or the situation has resolved. Using this very simple test (Figures 3 & 4) the heart rhythm can be diagnosed with certainty and some clues to possible underlying heart problems may often be detected.

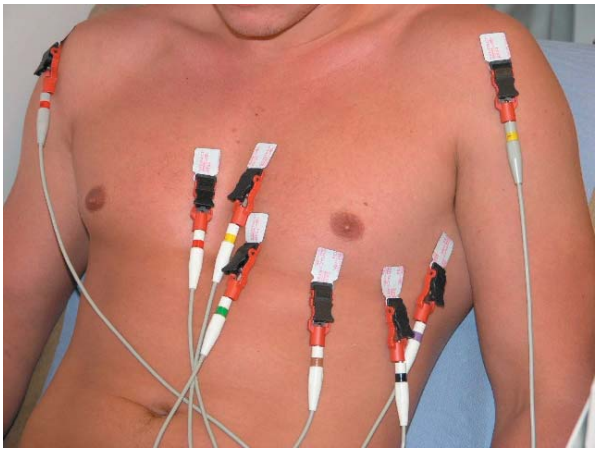


Figure 4: Recording an electrocardiogram (ECG)

Echocardiogram (image of the heart produced from reflected sound waves)

When ultrasound waves are generated by a probe which has been carefully positioned on the surface of the chest, the refl ections of these waves ("echoes") can be used to build a picture of the structure and movement of the heart. Almost everyone is familiar with the use of this type of test to see a baby in the womb. The test is painless and without any hazard to the patient although the "high tech" environment and dim lighting of the echo room can cause anxiety. (Figure 5). The results of this test tell the physician about heart muscle disease (thinning or thickening), the size of the main pumping chambers, and the state of the heart valves, any of which might have caused or aggravated the heart rhythm abnormality.

Figure 5: Echocardiograph machine

Blood tests

A variety of blood tests may be needed depending on the patient's medical history. In almost all cases the activity of the thyroid gland will be measured from the blood sample because over activity of this gland may provoke Atrial Fibrillation. If the patient has suffered chest pain, a marker of heart muscle damage (troponin) is often measured. If the heart is enlarged, poor heart muscle contraction may be estimated by measuring BNP - a protein in the blood which increases if heart muscle contraction is compromised. If the patient is taking other medicines, has underlying heart disease or has any other medical problems, suitable tests will be arranged. The test results may point to other investigations or treatments which might need to be initiated or completed before cardioversion can proceed. For example, if tests indicate that the potassium level in the blood is too low, the patient may need to receive potassium supplements to increase the level before the cardioversion can take place.

PREPARING FOR ELECTRICAL CARDIOVERSION

Is anticoagulation with blood thinning medicine needed before cardioversion?

During Atrial Fibrillation blood may stagnate and clot, particularly in the left atrium. When the normal rhythm resumes and the atria begin to beat Figure 5: Echocardiograph machine mechanically, a blood clot that has formed in the atrium can be ejected into the moving blood stream and circulate to the brain or another vital part of the body. The blood clot may obstruct an artery, for example in the brain, and the patient may suffer a stroke. Cardioversion is often considered shortly after the onset of Atrial Fibrillation. The longer the atria fibrillate, the more likely a blood clot will form. Most physicians use a "24 or 48 hour" rule - if the Atrial Fibrillation has been present for less than 24 (or 48) hours the patient does not need to be anticoagulated before cardioversion although a blood thinning type of medicine (heparin) will be injected into the veins at the time of cardioversion, in all patients. Most patients will then be recommended to use warfarin (a blood thinning medicine that may be taken by mouth) for at least four weeks after the cardioversion procedure. Some who are at more risk than others will be strongly advised that they should never stop taking warfarin unless they develop serious side effects.

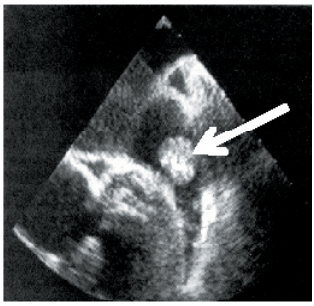


Figure 6: A trans-oesophageal echocardiogram (TOE) showing a blood clot (arrow) in the left atrium

If Atrial Fibrillation has lasted for more than 24 (48) hours there are two approaches to cardioversion. If it is necessary to restore the normal rhythm as quickly as possible, the patient may be offered another test – a trans-oesophageal echocardiogram (TOE) performed using a probe which the patient swallows so that the probe lies in the oesophagus (gullet) at the right level to look directly in to the left atrium. In this way it can be seen whether a clot has formed and whether it is safe to proceed with cardioversion without prior administration of warfarin. If a clot Figure 6: A trans-oesophageal echocardiogram (TOE) showing a blood clot (arrow) in the left atrium is not present, cardioversion may proceed as described earlier with heparin used during the procedure and warfarin given after the procedure.

However, if a clot is present or if the patient and physician choose not to use a transoesophageal echo test, the patient must be adequately anticoagulated for at least three weeks (but it often takes much longer) before a cardioversion is attempted. For this, the patient may be initiated on anticoagulation treatment (usually using warfarin) (see booklet AFA Warfarin Therapy). Warfarin treatment involves taking a carefully prescribed dose of warfarin and checking its blood thinning effect by measuring a value known as the INR (this stands for International Normalised Ratio). This is a measure of how effectively the blood will clot (thin blood clots less easily); the normal value is 1 and higher values indicate thinner blood. An INR level above 2 must be achieved for at least three continuous weeks before cardioversion. In order to improve the chance of this, many physicians routinely advise that the patient should aim at values of 3 (or between 2.5 and 3.5) for a period prior to cardioversion. However, the higher the value of the INR, the greater the danger of bleeding, so treatment with warfarin must always be carefully discussed with the prescribing doctor, particularly because alcohol, diet and many other medicines may interfere with the action of warfarin (see AFA booklet Blood Thinning In Atrial Fibrillation).

Box 2: Possible Reasons for postponement of cardioversion
INR results are not satisfactory (<2.0 for three weeks and one day before the cardioversion)
Transient cause of Atrial Fibrillation not controlled (e.g., over active thyroid gland or chest infection)
Other illness present (e.g., flu or tummy upset)
Administrative problems at the hospital

Other factors such as reverting spontaneously to normal sinus rhythm or anaesthetic risks such as lung disease or obesity may be identifi ed. In such cases the patient may need to stay in hospital after the procedure to minimise complications. Underlying cardiac disease such as high blood pressure (hypertension), heart failure or thyrotoxicosis may remain uncontrolled and need more treatment before cardioversion can be undertaken, or blood thinning (the INR measurement) may be unstable. If no complications are present, then the procedure will be explained to the patient and instructions will be given about travelling to and from the hospital, what medicines to take and when to be "nil by mouth".

Box 3: Body Mass Index (BMI) see NHS Direct web site: http://www.nhsdirect.nhs.uk/magazine/interactive/bmi/index.aspx	
This is a measure of body fat. It is calculated by dividing your weight in kilograms by your height in metres squared: **BMI = weight (kg) / height^2 (m)** Index applies to adults as follows:	
Underweight	<18.5
Normal weight	18.5-24.9
Overweight	25-29.9

ELECTRICAL CARDIOVERSION

While this may sound terrifying, it is very simple in principle and it is highly effective treatment in carefully chosen patients. The idea is to use an electric shock to activate the whole heart at once. This prevents the perpetuation of AF, so after the shock the normal heart beat (sinus rhythm) will be able to emerge. On the day of the procedure the patient should arrive at the hospital and follow the centre's guidelines on registration and admission. The cardioversion itself involves connecting the patient to an ECG monitor which in turn is connected to the cardioverter/defi brillator (Figure 7, Panel A). A needle is positioned in a vein and an injection of short acting anaesthetic or powerful sedation is given. The patient is then asleep and/or totally unconcerned about the procedure.

Box 4: Anti-arrhythmic Drugs for Atrial Fibrillation	
Class 1	**Class 3**
Disopyramide	Sotalol
Flecainide	Amiodarone
Also see the AFA booklet, Atrial Fibrillation Drug Information	

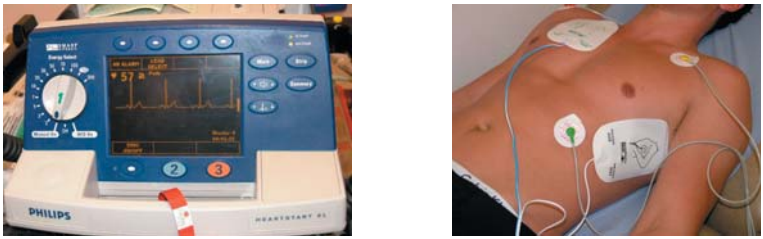


Figure 7:A cardioversion machine (panel A) which is connected to the patient via patch electrodes (panel B) positioned on the front of the chest.

Electrode patches or plates are positioned on the back and front of the chest, or on the upper right and lower left or the chest (Figure 7, Panel B). The cardioverter/defi brillator is charged and set to deliver a shock simultaneously with the next heart beat. Often the fi rst shock is successful (Figure 8) but sometimes several shocks at increasing energy levels or with different electrode patch positions are needed to convert the rhythm. The normal rhythm is restored in about 90% of patients, but a small proportion immediately return to Atrial Fibrillation.

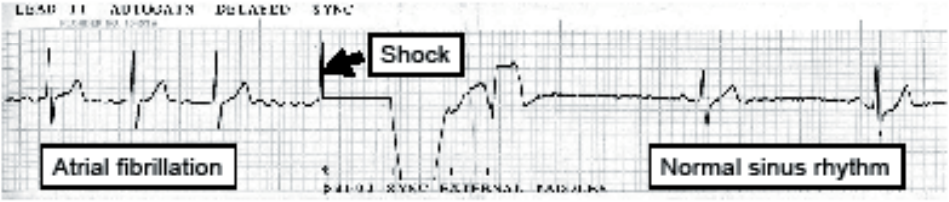


Figure 8:ECG showing the conversion of Atrial Fibrillation to sinus rhythm after a shock to the heart.

Over the next few days, 10% - 20% lapse back into the arrhythmia but this can be reduced when necessary by asking the patient to take an anti-arrhythmic drug (Box 4).

Box 5: Risks of Cardioversion

- Slow heart rhythm (bradycardia) – usually very transient and at most needing treatment with an intravenous medicine (atropine) or a short period of pacing (electrical stimulation of the heart to initiate heart beats) for a short time.
- Fast heart rhythm (such as ventricular tachycardia) which may need a follow-up shock before the patient regains consciousness.
- Stroke, which is rare if the patient has been fully anticoagulated before the procedure, if the duration of the Atrial Fibrillation is short, or if a transoesophageal (TOE) has not demonstrated a clot in the heart.
- Skin burns or irritation from the electrodes (patches) - this is rare with modern patch electrodes.
- Early reversion of the normal rhythm back to Atrial Fibrillation – this may require further shocks (often when still under anaesthetic/ sedation).
- General anaesthetic risks – rare in normal sized people with no other medical problems.

After the procedure, the patient is awake within a minute or so and, although groggy for a while, quickly regains full control and will be ready to go home after a few hours. The ECG is monitored until the patient is fully recovered, a 12-lead ECG is recorded and the patient is then allowed to get up and move around. A friend or partner should come to hospital with the patient as they cannot drive for 24 hours after the procedure and should be accompanied home. Someone should also stay with them on the night after the procedure in case they have a late complication.

MEDICAL CARDIOVERSION
Intravenous (injected through the veins) or oral medicine

Several anti-arrhythmic drugs can be used to convert Atrial Fibrillation into sinus rhythm. Flecainide, sotalol, or amiodarone can be selected. If this procedure is selected, no anaesthesia or sedation is necessary. The injection is usually (depending on the drug chosen) given over a period of 10 minutes to one hour. During this time the ECG is monitored continuously and may be recorded from time to time. Usually the arrhythmia will terminate within minutes or at most 1 - 2 hours after the injection. The ECG is often monitored for some minutes to hours after the drug has been administered, to be sure that any abnormal rhythm which may emerge may be quickly detected and treated. When the situation is stable the patient is allowed to go home. If the Atrial Fibrillation has not been converted to normal sinus rhythm, another treatment strategy will be discussed with the patient. Cardioversion with medicines should follow the same rules as for electrical cardioversion.

Medicines by mouth

It is possible to convert early onset Atrial Fibrillation by taking antiarrhythmic medicines by mouth. However, at normal doses, this may take several days or weeks to occur. Amiodarone, fl ecainide or sotalol may be used. Administration

of ahigher than normal dose of anti-arrhythmic medication is usually more successful, but this must be done initially in hospital to test the effect and safety of the technique.

Pill-in-the-pocket technique

Patients with Atrial Fibrillation often ask their doctor whether it might be possible to take a medication only at the time that they get Atrial Fibrillation in order to restore the normal rhythm, rather than taking it all the time to ward off attacks which might only occur rarely. In fact it is not unusual for patients to forget to take medication when they have the normal rhythm and if they suddenly develop Atrial Fibrillation, they may then remember to take the medicines and often take a higher dose than normal. This is not recommended without full discussion with the physician, to ensure that it can be safely done.

Only some patients are suitable for this method of treatment. They should:

- be able to recognise the onset of the Atrial Fibrillation.
- have attacks that happen no more frequently than at weekly or preferably monthly intervals.
- have no significant underlying heart disease.
- have no disabling symptoms during an attack (fainting, severe chest pain or breathlessness).
- be able to understand the proper way of taking the medication.

The usual way to begin treating a patient in this way is by asking the patient to report to the nearest Accident and Emergency (A&E) department, as soon as possible after the onset of an attack. The patient will have been given a letter to inform the A&E staff about the procedure. A routine 12-lead ECG should be

performed to check the rhythm and the general state of the heart. The patient should then be connected to an ECG monitor from which recordings can be taken if needed. The patient will be rested and given the appropriate dose of the anti-arrhythmic drug which has been selected for use. This is taken with a small sip of water and the patient then lies down and relaxes, reads or watches the TV. The staff keep an eye on the situation and the ECG monitor is alarmed, to alert the A&E staff of any change of the rhythm. From time to time, the blood pressure is taken. In some cases, the technique does not work and the patient is discharged after about four hours, often after being given medication to control the heart rate and with an appointment to see the physician in charge. In most patients, the Atrial Fibrillation does convert to sinus rhythm and the patient is allowed home after an hour of additional ECG monitoring. Provided that the technique was shown to be effective and safe (no abnormal rhythm has developed and the blood pressure has been stable), the patient is then allowed to self-administer the same dose of the same medication whenever Atrial Fibrillation reoccurs. Progress is monitored in the out-patient department and in conjunction with the family physician. Antiarrhythmic drugs that have been used in this way include fl ecainide, propafenone, sotalol and ranolazine, although none of them are specifi cally licensed for this mode of treatment and ranolazine is not licensed for use in Atrial Fibrillation at all.

What happens after cardioversion?

An hour or two after a routine cardioversion, the patient is allowed home after appropriate assessment. Preferably, the patient should be accompanied by a friend or relative and certainly should not drive, operate machinery or do anything requiring concentration and skill that day. The patient will be given anticoagulation medicine to take (usually warfarin) and may be informed about the likely duration of treatment with this medicine. Often an anti-arrhythmic drug is recommended, to be taken at least for some months after a successful cardioversion. The patient will receive an appointment for the out-patient department to discuss subsequent management. Patients whose cardioversion has been unsuccessful are checked to ensure that they are well and then scheduled for

an early out-patient visit. If a complication has occurred, it may be necessary for the patient to remain in hospital depending on the nature and extent of the complication.

And in the longer term?

In the longer term, a suitable therapy which is effective and side effect free must be designed for the patient. Any underlying heart problem must be dealt with. It is crucial to review the need for ongoing medication after the cardioversion procedure. Anticoagulation treatment should be continued for at least four weeks in all cases. The patient should then be assessed in order to calculate his risk of developing blood clots in the atrium. Some patients, such as those with artifi cial heart valves and previous rheumatic fever, defi nitely need anticoagulation. Other patients are evaluated using a scoring system such as the CHADS2 system:

CHADS2 Scoring System	
• Age over 75 years	1 point
• Treated high blood pressure	1 point
• Congestive Heart failure	1 point
• Diabetes	1 point
• Previous stroke or transient ischemic attack	2 points

If the total score is 2 or more the patient should take warfarin for life (unless there is a good reason for not doing this, for example an allergy or a previous bleed due to treatment with warfarin); if the score is 0 aspirin treatment is suffi cient. Those patients with a score of 1 must be more carefully assessed to work out whether treatment with aspirin or warfarin is the most sensible approach. Factors which may lead to a recommendation to use warfarin treatment include:

- Female gender
- Age between 65 and 74 years
- Presence of peripheral vascular disease
- Presence of carotid artery disease
- Presence of coronary artery disease (seen on echo test)
- Presence of a large left atrium (seen on echo test)
- Poor pumping action of the left ventricle (seen on echo test)

The need for continuing anti-arrhythmic treatment should be carefully considered. If the cardioversion was unsuccessful and no further intervention such as another cardioversion or an ablation procedure are to be undertaken, it is unnecessary to continue to take anti-arrhythmic medication. Rate control drugs such as beta blockers, calcium antagonists (verapamil or diltiazem), or digoxin should be considered. If the cardioversion was successful, the anti-arrhythmic medication may be continued as long as the physician believes that there is a signifi cant risk of a relapse.

Further information

For further information on Atrial Fibrillation, please contact the Atrial Fibrillation Association.

Website: www.atrialfibrillation-au.org
www.afa-international.org

Email: info@atrialfibrillation-au.org

Telephone: 1800 050 267 or (02) 61084602

Patient Checklist for Electrical Cardioversion

	Action	Done
1	Contact the Atrial Fibrillation Association (AFA) for the Cardioversion Patient Checklist.	✓
2	Ask for brochures and information from the hospital.	
3	Read about the cardioversion procedure.	
4	Do you know why you have been recommended to undergo a cardioversion?	
5	Who is your contact / link person at the hospital, e.g. cardiology registrar?	
6	Have you been started on anticoagulation? – If not, ask your GP or hospital contact.	
7	If you have started on warfarin you need weekly blood tests, have they been arranged?	
8	Who is keeping an eye on these results (Anticoagulation Clinic, or General Practitioner or Physician or Cardiologist)?	
9	Who is responsible for planning the date for your cardioversion?	
10	Is there a pre-assessment appointment before your cardioversion for you to ask questions?	

11	Do you know which of your medicines you have to continue to take, and which should be stopped, and when?	
12	Have you seen and read the consent form and the official information sheet about the procedure?	
13	Do you understand the risks associated with cardioversion?	
14	Have you talked to the person who will do the cardioversion?	
15	If English is not your first language, has an interpreter been arranged?	
16	Make arrangements to be collected after discharge – remember you will not be allowed to drive.	
17	You may need to consider taking time off work (especially the day after the cardioversion, especially if your work involves driving or when the cardioversion is scheduled for late in the day).	
18	Arrange for family / friend to stay overnight, post discharge.	

Glossary

Amiodarone	An anti-arrhythmic drug used to treat Atrial Fibrillation (or Atrial Flutter).
Atrium	Chamber of the heart into which blood returns from the body (right atrium) and from the lungs (left atrium).
Beta blocker	A medicine that blocks the sympathetic nerve effects on the heart and thereby slows the recovery of the AV node (electrical path way linking the atrium to the ventricle) and thereby slows the heart rate during Atrial Fibrillation.
Congestive heart failure	A medical condition in which the heart fails to pump suffi cient blood to meet the needs of the body. Fluid may accumulate in the lungs (causing breathlessness) and in the dependent parts of the body (causing ankle swelling).
DCCV (Direct Current Cardioversion)	Technique using an electrical shock to convert the rhythm of the heart from Atrial Fibrillation (or flutter) to normal sinus rhythm.
Diabetes	A medical condition characterised by inadequate control of blood sugar, which is treated with insulin, oral medicines and weight reduction, where appropriate.
Digoxin (a member of the glycoside family)	A medicine that slows the recovery of the AV node (electrical pathway linking the atrium to the ventricle) and thereby slows the heart rate during Atrial Fibrillation.

Diltiazem (one variety of calcium channel blocker)	An anti-arrhythmic drug used to reduce the heart rate in AtrialFibrillation.
Disopyramide	An anti-arrhythmic drug used to prevent Atrial Fibrillation.
CHADS a scoring system	A method of assessing stroke risk in patients with Atrial Fibrillation (or Atrial Flutter). It is an acronym which stands for Congestive heart failure, Hypertension (high blood pressure), Age (75 year or over), Diabetes and Stroke (TIA or CVA).
Coronary artery disease	Narrowing of the coronary arteries - the blood supply to the heart muscle.
ECG (electrocardiogram)	A recording of the electrical activity of the heart taken from the surface of the body. The test is painless and has no risks associated with it.
Echocardiograph	A picture of the heart constructed by using reflected sound waves. The technique is painless and has no risks associated with it.
Flecainide (Tambocor)	An anti-arrhythmic drug used for chemical cardioversion of Atrial Fibrillation, or to prevent recurrences of Atrial Fibrillation
Hypertension	High blood pressure – a condition that puts strain on the heart, leading to thickening of heart muscle and increased size of the left atrium. It commonly predisposes to Atrial Fibrillation.

INR (International Normalised Ratio)	A measure of the ability of the blood to clot. The normal value is 1 and patients with Atrial Fibrillation are usually controlled at values between 2.0 and 3.0 (less easy to clot), targeted at 2.5. Patients may have other conditions that need higher INR values for satisfactory control.
Pill-in-the-pocket technique	Method of using a high dose of an anti-arrhythmic drug or two drugs by mouth, to convert the rhythm of the heart from Atrial Fibrillation to normal sinus rhythm.
Sotalol	An anti-arrhythmic drug used to prevent recurrences of Atrial Fibrillation (or Atrial Flutter).
Thyrotoxicosis	Over activity of the thyroid gland.
Ventricle	Pumping chamber of the heart. There is a right ventricle (pumping blood to the lungs) and a left ventricle (pumping blood to the body).
Verapamil (one variety of calcium channel blocker)	An anti-arrhythmic drug used to reduce the heart rate in Atrial Fibrillation.
Warfarin	A medicine used to thin (anticoagulate) the blood.

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MEMBERSHIP APPLICATION

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Providing information, support and access to established, new or innovative treatments for Atrial Fibrillation

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Please remember that this publication provides general guidelines only.
Individuals should always discuss their condition with a healthcare professional.
If you would like further information or would like to provide feedback please contact AF-A.

This booklet is intended for individuals affected by atrial fibrillation.
Information within this booklet is based upon clinical research and patients' experiences.